UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/963,960	09/25/2001	Thomas Burkhardt	020431.0947	1567

53184 7590 02/22/2007
i2 TECHNOLOGIES US, INC.
ONE i2 PLACE, 11701 LUNA ROAD
DALLAS, TX 75234

EXAMINER	
DESHPANDE, KALYAN K	

ART UNIT	PAPER NUMBER
3623	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/22/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	09/963,960	BURKHARDT ET AL.	
	Examiner	Art Unit	
	Kalyan K. Deshpande	3623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 20 November 2006.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-7,9-16,18-25 and 27-30 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-7, 9-16, 18-25, and 27-30 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Introduction

1. The following is a final office action in response to the communications received on June 16, 2006. Claims 1-7, 9-16, 18-25, and 27-30 are now pending in this application. Claims 8, 17, and 26 have been previously cancelled.

Examiner's Note

2. It appears from the amendments set forth in the present response from Applicants that the invention is to be directed towards a database schema where performance is maximized with the use of distributed database partitions and multiple parallel processing. However, in the broadest reasonable interpretation of the claims, the present invention is a separate memory allocation (partition) for each sub-problem that can be processed by single processor independently solving each sub-problems.

Response to Amendment

3. Examiner acknowledges Applicant's amendments to claims 1, 9, 10, 18, 19, and 27. Examiner acknowledges Applicants' previous cancellation of claims 8, 17, and 26.

Response to Arguments

4. Applicants' arguments filed on November 20, 2006 have been fully considered but are not found persuasive. Applicants argue i) Jameson fails to teach "providing a plurality of distributed database partitions, each partition of said plurality of distributed database partitions associated with a respective independent sub-problem of said supply chain planning problem", ii) James fails to teach "operating at least one process in said database, each of said at least one processor associated with a respective

partition of said plurality of distributed database partitions", and iii) Jameson fails to teach "solving each of said plurality of said independent sub-problems by separate processes operating in parallel in said database".

In response to Applicants' argument Jameson fails to teach "providing a plurality of distributed database partitions, each partition of said plurality of distributed database partitions associated with a respective independent sub-problem of said supply chain planning problem", Examiner respectfully disagrees. Jameson explicitly teaches "providing a plurality of distributed database partitions, each partition of said plurality of distributed database partitions associated with a respective independent sub-problem of said supply chain problem" (see column 7 lines 45-54, column 8 lines 19-21, and column 10 lines 1-25; where the system accounts for larger sub-problems. Sub-problem partitions are defined as larger sub-problems per the specification. See specification p. 9 line 16. Further, clusters are combined to create larger clusters or larger sub-problems. The sub-problems consist of scenarios, where a scenario is a set of related events. Each scenario is an independent sub-problem. Each scenario is entered into a matrix. A matrix is the same as a database. The system can account for several matrices, thus this is the same as a distributed database and each matrix can be a database partition.). Applicants further argue that Jameson fails to teach each physical database partition is associated with a sub-problem. As is discussed above, each scenario has a matrix, which is the same as a database partition consisting of a sub-problem. Applicants contention that Jameson fails to teach a "physical database partition" is irrelevant since the features upon which applicant relies (i.e., physical

database partition) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

In response to Applicants argument James fails to teach "operating at least one processor in said database, each of said at least one processor associated with a respective partition of said plurality of distributed database partitions", Examiner respectfully disagrees. Jameson explicitly teaches "operating at least one processor in said database, each of said at least one processor associated with a respective partition of said plurality of distributed database partitions" (see column 5 lines 10-35 and column 24 lines 61-67; where multiple processors can be used to increase the system efficiency. Furthermore, each processor can be used in parallel for each instance of ZCluster and each processor can handle a branch of the scenario tree.). The broadest reasonable interpretation of this limitation requires that only one processor be operated and this processor being associated with a sub-problem. Jameson clearly teaches this in the broadest sense, since Jameson teaches the use of at least one processor (see column 5 lines 10-35 and column 24 lines 61-67; where the use of a processor is disclosed) and with the use of only a single processor that processor will be associated with all sub-problem. Again, Applicants contention that Jameson fails to teach a "physical database partition" is irrelevant since the features upon which applicant relies (i.e., physical database partition) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are

not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

In response to Applicants' argument Jameson fails to teach "solving each of said plurality of said independent sub-problems by separate processes operating in parallel in said database", Examiner respectfully disagrees. Jameson explicitly teaches "solving each of said plurality of said independent sub-problems by separate processes operating in parallel in said database" (see column 8 lines 8-25; where the sub-problems are solved to determine the optimal allocation point. Each sub-problem is solved independently. The matrices are stored on individual machines thus allowing the matrices to be stored across several computers. A distributed database is defined as a database that be distributed to several computers.). Examiner is confused as to Applicants' argument, specifically since Applicants concede that James teaches the solving sub-classes in parallel (see Remarks page 14). Applicants' fail to clearly distinguish differences between Jameson and the present invention with regard to this argument, therefore Applicants' arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-7, 9-16, 18-25, and 27-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jameson (U.S. Patent No. 6219649).

As per claim 1, Jameson teaches:

A method for solving a supply chain planning problem, comprising the steps of:

Decompositioning the supply chain planning problem into a plurality of independent sub-problems (see column 7 lines 45-54; where the allocation problem is divided in to simpler sub-problems. Resource allocation is a part of supply chain management.);

Providing a plurality of distributed database partitions, each partition of said plurality of distributed database partitions associated with a respective independent sub-problem of said supply chain problem (see column 7 lines 45-54 and column 8 lines 19-21; where the system accounts for larger sub-problems. Sub-problem partitions are defined as larger sub-problems per the specification. See specification p. 9 line 16. Further, clusters are combined to create larger clusters or larger sub-problems. The sub-problems consist of scenarios, where a scenario is a set of related events. Each scenario is an independent sub-problem.);

Operating at least one processor in said database, each of said at least one processor associated with a respective partition of said plurality of distributed database partitions (see column 5 lines 10-35 and column

24 lines 61-67; where multiple processors can be used to increase the system efficiency. Furthermore, each processor can be used in parallel for each instance of ZCluster and each processor can handle a branch of the scenario tree.);

Forming a plurality of distributed sub-problem partitions, each of said sub-problem partitions including a plurality of related items and associated with a respective independent sub-problem of said supply chain planning problem (see column 7 lines 45-54 and column 8 lines 19-21; where the system accounts for larger sub-problems. Sub-problem partitions are defined as larger sub-problems per the specification. See specification p. 9 line 16. Further, clusters are combined to create larger clusters or larger sub-problems. The sub-problems consist of scenarios, where a scenario is a set of related events. Each scenario is an independent sub-problem.);

Loading data into a plurality of distributed database partitions, said data associated with said plurality of related items, and each of said distributed database partitions associated with a respective one of each of said distributed sub-problem partitions (see column 5 lines 35-40, column 7 line 25, column 11 lines 3-15, column 18 lines 49-56 and column 29 lines 35-57; where separate matrices contain variables for each scenario. Each matrix contains rows and columns to hold data

elements. The matrices, also having a separate memory portion, are a database partitions.); and

Solving each of said plurality of said independent sub-problems by separate processes operating in parallel in said database (see column 8 lines 8-25; where the sub-problems are solved to determine the optimal allocation point. Each sub-problem is solved independently. The matrices are stored on individual machines thus allowing the matrices to be stored across several computers. A distributed database is defined as a database that be distributed to several computers.).

Jameson does not explicitly teach a method of "solving a supply chain method". Jameson, however, does teaches a resource allocation system and method (see column 5 lines 13-34). Additionally, Jameson teaches handling forecasted demand uncertainty as a constraint in the algorithm to determine optimal resource allocations (see column 5 lines 13-34 and column 19 lines 1-45). The present invention describes the supply chain problem as demand forecasting problems, service level requirement problems, and replenishment planning problems (see Specification page 2). Thus, Jameson specifically handles a supply chain problem (by handling forecasted demand uncertainty) as described by the Applicants. Furthermore, the intended use of a method must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

As per claim 2, Jameson discloses:

The method of Claim 1, further comprising the steps of:

Forming a plurality of clusters, each of said clusters including said plurality of related items (see column 8 lines 5-12; where optimal points are clustered and the clusters include the scenario, where scenarios are a set of related events); and

Forming said plurality of distributed sub-problem partitions from said plurality of clusters (see column 5 lines 35-40 and column 11 lines 3-15, column 7 lines 45-54, and column 8 lines 19-21; where the system accounts for larger sub-problems. Sub-problem partitions are defined as larger sub-problems per the specification. See specification p. 9 line 16. Further, clusters are combined to create larger clusters or larger sub-problems. The sub-problems consist of scenarios, where a scenario is a set of related events).

As per claim 3, Jameson teaches:

The method of claim 1, wherein the number of distributed sub-problems is equal to the number of database partitions (see column 7 lines 58-67, column 8 lines 1-8, and column 19 lines 1-46; where the optimal allocation problem is solved for each scenario. As in the example provided each scenario is loaded into a database partition (ZCluster Objects). Thus each sub-problem (scenario) is equal to the number of database partitions (ZCluster Objects).

As per claim 4, Jameson discloses:

The method of Claim 1, wherein said plurality of related items are related by one or more pre-define relationship rules (see column 10 lines 50-68, column 11 lines 1-29, and figures 6-8; where all of the elements of a scenario are processed under pre-defined rules).

As per claim 5, Jameson teaches the method of Claim 2, wherein the forming said plurality of said clusters further comprises a step of storing said clusters (see column 18 lines 49-61; where cluster arguments and function calls are stored to increase performance of future processing by calling stored results). Jameson fails to disclose the step of forming said plurality of said clusters further comprises a step of assigning a CLUSTER_ID to each item of said plurality of related items. It is old and well-known in data management to assign an identification value to items stored in a database. The step of storing a cluster automatically gives it a CLUSTER_ID in a database row. The advantage of assigning an identification value to items stored in a database is that the item and its respective row can be more efficiently found in the database by simply querying the database for the assigned identification value. It would have been obvious, at the time of the invention, for one of ordinary skill in data management to assign an identification value to the clusters stored in Jameson's system in order to more efficiently find the clusters and their stored results.

As per claim 6, Jameson teaches the step of forming a plurality of distributed sub-problem partitions from said plurality of clusters (see column 7 lines 45-58 and column 24 lines 61-67; where clustering is used to divide resource allocation problems into simpler sub-problems. Using simpler sub-problems enhances the system to run

faster and simpler. Furthermore, multiple processors can be used to solve each of the sub-problems.). Although Jameson teaches creating sub-problems in order to facilitate computational time and complexity, Jameson fails to explicitly teach creating sub-problem objects of the same size. It is old and well-known in the art to equally size objects for processing. The advantage of creating objects of the same size is that it increasing the computational speed and minimizing the computational complexity. IT would have been obvious, at the time of the invention, to one of ordinary skill in the art to take the teachings of Jameson to divide an allocation problem into sub-problems and modify Jameson to include the feature of equally sizing the sub-problem partitions in order to increase the system speed and minimizing the computational complexity, which is a goal of Jameson (see column 7 lines 45-57 and column 24 lines 61-67).

As per claim 7, Jameson discloses:

> The method of Claim 1, wherein the step of solving each of said plurality of said distributed sub-problems further comprises a step of solving said plurality of independent sub-problems in parallel (see column 24 lines 61-67; where the use of multiple processors is desirably for the parallel execution of multiple instances of clusters).

As per claim 9, Jameson teaches:

> A computer implemented method for solving a supply chain planning problem, comprising the steps of:
>
> > Decompositioning the supply chain planning problem into a plurality of independent sub-problems (see column 7 lines 45-54; where the

allocation problem is divided in to simpler sub-problems. Resource allocation is a part of supply chain management.);

Providing a plurality of distributed partitions in a database, each partition of said plurality of distributed partitions associated with a respective independent sub-problem of said supply chain problem (see column 7 lines 45-54 and column 8 lines 19-21; where the system accounts for larger sub-problems. Sub-problem partitions are defined as larger sub-problems per the specification. See specification p. 9 line 16. Further, clusters are combined to create larger clusters or larger sub-problems. The sub-problems consist of scenarios, where a scenario is a set of related events. Each scenario is an independent sub-problem.);

Operating at least one processor in said database, each of said at least one processor associated with a respective partition of said plurality of distributed partitions (see column 5 lines 10-35 and column 24 lines 61-67; where multiple processors can be used to increase the system efficiency. Furthermore, each processor can be used in parallel for each instance of ZCluster and each processor can handle a branch of the scenario tree.);

Storing data associated with at least one new item in a temporary database location (see column 5 lines 35-40, column 7 line 25, column 11 lines 3-15, column 18 lines 49-56 and column 29 lines 35-57; where separate matrices contain variables for each scenario. Each matrix

contains rows and columns to hold data elements. The matrices, also having a separate memory portion, are a database partitions.);

Forming at least one cluster, said at least one cluster including said data associated with said at least one item (see column 8 lines 5-12; where optimal points are clustered and the clusters include the scenario, where scenarios are a set of related events);

Merging said at least one cluster with at least one cluster associated with at least one sub-problem partition (see column 7 lines 45-54 and column 8 lines 19-21; where the system accounts for larger sub-problems. Sub-problem partitions are defined as larger sub-problems per the specification. See specification p. 9 line 16. Further, clusters are combined to create larger clusters or larger sub-problems. The sub-problems consist of scenarios, where a scenario is a set of related events);

Loading said data into at least one database partition, said at least one database partition associated with said at least one sub-problem partition (see column 5 lines 35-40, column 7 line 25, column 11 lines 3-15, column 18 lines 49-56 and column 29 lines 35-57; where separate matrices contain variables for each scenario. Each matrix contains rows and columns to hold data elements. The matrices, also having a separate memory portion, are a database partitions.); and

Solving said at least one independent sub-problem by separate processes operating in parallel in said database (see column 8 lines 8-25; where the sub-problems are solved to determine the optimal allocation point. Each sub-problem is solved independently. The matrices are stored on individual machines thus allowing the matrices to be stored across several computers. A distributed database is defined as a database that be distributed to several computers.).

Claims 10-16, 18-25, and 27 recite a "computer-implemented system for solving a supply chain planning problem" and "software for solving a supply chain planning problem" taught by Jameson (see column 1 lines 13-14 and column 5 lines 35-40). Claims 10-16, 18-25, and 27 further recite limitations already addressed by the rejections of claims 1-7 and 9; therefore the same rejection applies to this claim.

7. Claims 28-30 rejected under 35 U.S.C. 103(a) as being unpatentable over Jameson (U.S. Patent No. 6219649) in view of Chopra et al. (Chopra, Sunil; Meindl, Peter; <u>Supply Chain Management: Strategy, Planning, and Operation</u>, Prentice Hall, October 2000).

As per claim 28, Jameson teaches "said supply chain planning problems comprise problems selected from the group consisting of demand forecasting" (see column 5 lines 13-34 and column 19 lines 1-45; where uncertain constraints are handled and a resource allocation problem in terms of an forecasted demand uncertainty is provided.). Jameson fails to explicitly teach supply chain problems of "service level planning" and "replenishment planning". Chopra, in an analogous art,

teaches solving supply chain problems for "service level planning" and "replenishment planning" (see pp. 179-220; where methods for cycle service level planning and replenishment policies is discussed). Chopra further teaches supply chain problems of demand forecasting (see pp. 67-100; where planning for demand using demand certainty and demand uncertainty is done). The advantage of solving supply chain problems of demand forecasting, service level planning, and replenishment planning is that it facilitates the availability of product in light of the supply and demand variability. It would have been obvious, at the time of the invention, to combine the teachings supply chain management with regard to "supply chain problems consisting of demand forecasting, service level planning, and replenishment planning" of Chopra to Jameson in order to facilitate the availability of product in light of the supply and demand variability, which is a goal of Chopra (see p. 179-180).

Claims 29-30 recite a "computer-implemented system for solving a supply chain planning problem" and "software for solving a supply chain planning problem" taught by Jameson (see column 1 lines 13-14 and column 5 lines 35-40). Claims 29-30 further recite limitations already addressed by the rejection of claim 28; therefore the same rejection applies to these claims.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following are pertinent to the current invention, though not relied upon:

Christensen (U.S. Patent Publication No. 20020049759) teaches a high performance relational database management system that associates a processor to each distributed database partition.

DeWitt et al. (DeWitt, David J.; Gray, Jim; "Parallel Database Systems: The Future of High Performance Database Processing", ACM, Vol. 36, No. 6, June 1992) teaches different techniques to maximize the processing of large data volumes and specifically teach multiple processing of distributed database environments.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kalyan K. Deshpande whose telephone number is (571)272-5880. The examiner can normally be reached on M-F 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tariq Hafiz can be reached on (571) 272-6729. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

C. Michelle Tarae
C. Michelle Tarae
Primary Examiner
Art Unit 3623

KKD